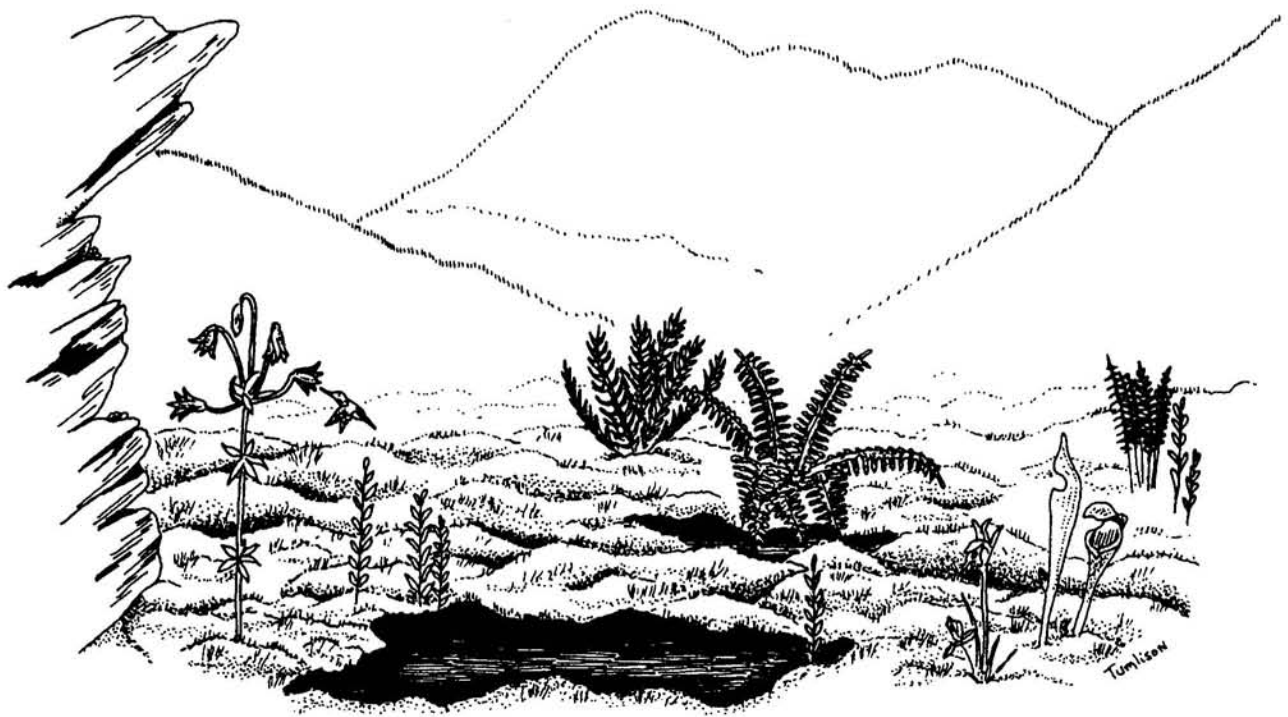


Tennessee's Mountain Bogs



What are Mountain Bogs?

Mountain bogs are distinctive wetland ecosystems, having a unique blend of topography, hydrology, soils, and climate. The word "bog" is of Gaelic origin; it refers to something soft and spongy. These swampy areas are made spongy by layers of waterlogged peat and mud, which are covered by thick carpets of sphagnum moss. Bogs can be very small—just a wet spot in the mountains—or they can cover hundreds of acres. The origin of bogs is fairly mysterious and not well known. Most Southern bogs form on fairly flat terrain. Shallow depressions in watertight clay and rock slowly fill with water; the water enters these systems much faster than it leaves. These waters are acidic, and decomposition is very slow. Thus, organic matter accumulates to form the distinctive layers of peat. Some bogs are very old, dating back 11,000 years or more to the last Ice Age! Natural disturbances, such as fire and grazing by native herd animals, may have contributed to the maintenance of these ecosystems.

Why are Bogs Important?

Bogs and other wetlands serve many valuable functions for wildlife and people. Because they are subject to slow decomposition, they provide scientists with a kind of historical time capsule, preserving microfossils of pollen from plants that grew around the bog thousands of years ago. They act as natural water purification systems, filtering out silt and absorbing pollutants. They function as natural flood control mechanisms. Flood waters are slowed by bogs and are slowly released into streams without causing erosion and other damage.

Many game species find shelter and food in bogs and other wetlands. Furbearers (such as mink, muskrat, raccoon, and beaver) and game birds (such as woodcock and waterfowl) thrive in these ecosystems. Bogs provide fresh green food for turkey and grouse when other areas have gone dry. Many bogs are located at the headwaters of trout streams, contributing to the productivity and high water quality needed by downstream fish species.

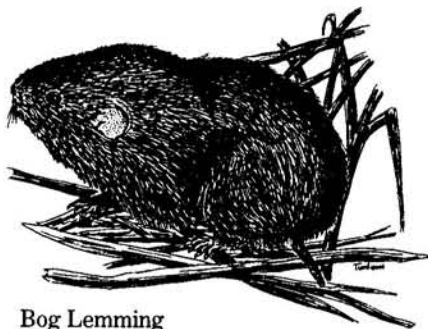
Rare and Unique Species Depend on Bogs

Southern Appalachian mountain bogs in Tennessee support a wealth of rare and unique life forms, including 36 species of rare plants. The acidic peat of bogs is deficient in many minerals needed for plant growth, so species that populate bogs are adapted to extremely acidic, nutrient-poor soils. Peat moss (sphagnum), hardy evergreens, and other unusual plants and animals thrive in these unique environments. Many of these species are found in no other habitat type. Some interesting plants that can be found in bogs include the cinnamon fern, royal fern, wild azalea, golden club, cranberry, orchid, bulrush, and sedge and carnivorous plants, such as the sundew and pitcher plant (various species). Carnivorous plants have adapted to obtain certain nutrients from trapped insects instead of soil.

A variety of animals depend on bogs as well. A small mouselike herbivore—the bog lemming—makes its home here, feeding on grasses and sedges. Black bears and white-tailed

You Can Help

To protect bogs it is important that water flow patterns in the area not be altered. Drainage devices, such as culverts and ditches, destroy bogs and the species that depend on them. It is also important to protect the vegetation surrounding bogs; this natural buffer maintains water flow patterns and decreases siltation from nearby slopes. If you have a wet area on your property that may be a bog, contact a biologist for verification and management assistance. Remember how unique and wonderful our Southern Appalachian bogs are, and take pride in Tennessee's natural world!



Bog Lemming

deer are known to frequent bogs. Amphibians, such as the wood frog, hide under logs in the cool, shady habitats found in and around bogs. Secretive bog turtles can be found nowhere else. Migratory songbirds, such as the palm warbler and Nashville warbler, benefit from the breeding and wintering habitats bogs provide.

Today this unique habitat is very rare in Tennessee and throughout the Southern Appalachians. Most of the mountain bogs in Tennessee are in the northeast corner of the state, an area long recognized as containing some of the state's most ecologically unique sites. Historic records indicate that there were once nearly 1,000 acres of peat bogs in these northeastern valley bottoms. Today only a few remnants remain, totaling no more than a few dozen acres. As bogs disappear, so do the unusual species that depend on them. Eastern Tennessee's few bogs provide one of the last remaining homes for the threatened bog turtle. The decline of flowers, such as the white fringeless orchid, will continue should their habitats continue to diminish. Two species no longer found in Tennessee's bogs (extirpated) are the green pitcher plant and bog laurel.

Threats to Bogs

Southern Appalachian mountain bogs are one of the rarest and most diminished wetlands in the Eastern United States; approximately 95 percent of these habitats have already been destroyed. They are considered one of the most threatened mountain ecosystems because they are so easily impacted. Any activity causing a change in the surrounding water flow patterns can destroy these unique systems.

Many bogs have been destroyed directly by logging, acid mine drainage, grazing, roaming feral hogs, agriculture, residential development, and road building. Ground-water

pumping, surface-water diversion, and increased nutrient input are degrading and changing many bogs. Many landowners have no idea of the treasures they possess. Some drain, fill, flood, or otherwise destroy these rare places without ever knowing the important function they serve and what wonderful plants and animals live there.

What's Being Done?

Because bogs are wetlands they are protected, and certain wetland activities are regulated under the Federal Clean Water Act. The ditching or filling of bogs and other wetlands requires a permit from the U.S. Army Corps of Engineers.

Efforts to restore bogs are underway. A cooperative venture involving The Nature Conservancy, the U.S. Fish and Wildlife Service, the Knoxville Zoo, and several private landowners is now underway in Tennessee to restore some of these bogs. Restoration efforts will include turning fields back into the bogs they once were by plugging drainage ditches and restoring natural hydrology. After restoration, native pitcher plants, orchids, and bog turtles will then be reintroduced back into their native habitat.

Seeing Is Believing

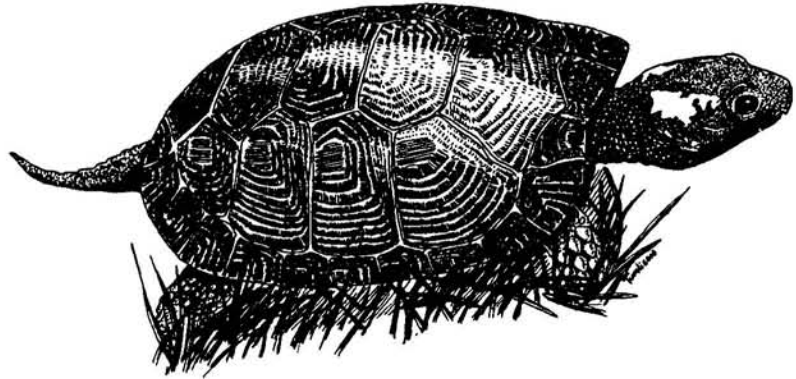
Visiting a mountain bog in Tennessee is usually not possible because of their delicate nature, extreme rarity and location on private lands. However, you can still support their conservation and learn more about them by subscribing to The Tennessee Conservationist magazine and/or joining the Tennessee Chapter of The Nature Conservancy. You can also contact The Nature Conservancy and the U.S. Fish and Wildlife Service for volunteer opportunities.

Bog Turtle

(*Clemmys muhlenbergii*)

You Can Help!

Tell a friend about the bog turtle. Protect wetlands and water quality. Never buy animals taken from the wild, whether they are protected by law or not. Plant and maintain native vegetation alongside springs and streams. Conserve water. Take pride in Tennessee's wildlife!



Status

The northern population of the bog turtle was listed as threatened on November 4, 1997. Even though the southern population has not had the extent of habitat loss, it was listed as threatened due to similarity of appearance to the northern population. The populations are separated by about 250 miles. There is one small population of bog turtles in Tennessee.

Description

The bog turtle is the smallest land turtle in North America. Adult shells are 3 to 4 1/2 inches in length and range in color from light brown to ebony. They are easily distinguished from other turtles by the large bright orange, yellow, or red blotch found on each side of the head.

Habitat

Bog turtles live in shallow bogs, swamps, marshy meadows, and pastures where there are soft, muddy bottoms.

Life History

Bog turtles are only active during part of the year. They hibernate just below the surface of frozen mud or ice from October through April. Mating occurs in May and June, and females deposit two to six eggs on sphagnum moss and sedges. The eggs hatch

after a period of 42 to 56 days, and the young turtles emerge in August and early September. Bog turtles eat beetles, larvae, snails, millipedes, fleshy pondweed seeds, sedge seeds, and carrion. To escape from predators, bog turtles burrow quickly into the mud.

Role in the Ecosystem

Bog turtles are an integral part of the mountain bog food web, and contribute to the biodiversity and health of the bog ecosystem.

Threats

The bog turtle is threatened by habitat loss and collection for the pet trade. Many wetland ecosystems, like bogs, have been drained and filled for development, road construction, and agriculture. The bog turtle is targeted by pet collectors because of its rarity in the wild, distinctive coloration, and small size.

Recovery

Most bog turtle habitat is on private land. State wildlife agencies and the U.S. Fish and Wildlife Service are helping private landowners manage their property for the protection of these rare turtles. The Nature Conservancy is also working to restore bog ecosystems in Tennessee.